Mammalogy

Chapter Goals:

After completing this chapter, volunteers should be able to:

- Compare the diversity and distribution of mammals in Idaho and demonstrate familiarity with the different groups of mammals.
- Explain the systematic relationships among various groups of mammals.
- Summarize the general characteristics of the major mammal groups.
- Discuss basic principles of mammal behavior, physiology, and ecology and relate these principles to environmental adaptations.
- Tell the habitat needs of various groups of mammals.
- Give examples of the role that mammals play in local ecosystems and various other ecosystems in Idaho.
- Demonstrate estimating/measuring mammal populations.
- Relate methods for trapping, marking, and monitoring mammal populations.
- Communicate the 11 major characteristics of mammals.
- Differentiate the three major taxonomic groups of mammals and name the characteristics that make those groups.

Introduction

Mammals were originally four-footed animals and most living mammals retain this basic structure. Over the past millennia, mammals have diversified to fill a great number of niches. Mammals now encompass a wide variety of animals. Some are of minor importance and some of greater importance to humans. Most mammals are terrestrial (land). However, there are about 1,000 species, mostly bats, and 80 aquatic species, mostly whales and dolphins included as mammals. While not a large group, about 4,450 species compared with more than 9,000 species of birds, 21,700 species of fishes, and one million species of insects, members of the class Mammalia provide humans with food, clothing, recreation, crop protection, insect control, and sometimes are nuisance problems.

American Pronghorn, Antilocapra americana is the fastest land animal in North American, able to run 54 miles per hour. Photo Courtesy, IDFG.

This section of the Master Naturalist curricula only provides a broad overview of mammals. Entire books have been written covering single species, families, or orders. Lengthy physical description, lists of habitats, gestation periods, and other factual data are readily available in scientific works, encyclopedias, and on the Internet.

Why Study Mammals?

Wildlife professionals study mammals to identify problems and to promote conservation and other policies based on sound science. Many professionals and conservation-minded individuals feel a duty to protect all species from extinction. Human well-being is ultimately tied to the web of plants and animals on this planet. Other people want to be able to identify the tracks, hair, skulls, or other animal signs for their own enjoyment. Some see mammals as food resources. Whatever your reasons for studying mammals learning about their characteristics, habits, and identifying features can provide a lifetime of enjoyment.

Diversity of Mammals

Major characteristics of Class Mammalia
Mammals are an advanced group in the animal kingdom that share unique features not found in other animals. Distinguishing features of mammals include:

- Body covered with hair, reduced in some.
- Integument with sweat, scent, sebaceous, and mammary glands.
- Mouth with teeth.
- Movable eyelids and fleshy external ears.
- Four limbs, in most, adapted for many forms of locomotion.
- Four-chambered heart.
- Respiration system with lungs and larynx; muscular diaphragm.
- Brain highly developed.
- Endothermic and homoeothermic.
- Internal fertilization; eggs developed in a uterus with placental attachment (except in monotremes).
- Young nourished by mammary glands.

Key characteristics unique to mammals are hair and mammary gland. The mammary glands produce milk that nourishes the young, and the hair helps insulate the body and maintain a warm, constant body temperature. Also serving a protective barrier is the skin, a layer of epidermis over a layer of fat.

Classification of Mammals

Mammals are divided taxonomically into three major groups by their mode of reproduction and embryonic development. The three groups include monotremes (subclass Prototheria), marsupials (subclass Metatheria [formerly Marsupialia]), and placentals (subclass Eutheria).

Monotremes

Monotremes are mammals that lay eggs. The eggs are incubated in subterranean nest. After the eggs hatch, the young feed on the milk secreted by the mother.

Females possess no teats and the milk oozes along special hairs. Only three living monotremes exist, the duck-billed platypus and two species of echidna, or spiny anteaters. All three are only found in Australia and New Guinea.

Marsupials

Marsupials are the second type of mammal. Marsupials give birth to live young that are born tiny, very immature, and must climb into the mother's pouch, called a marsupium. Once in the pouch, they grab a hold of a teat and do not leave until they are mature. The most recognized example of a marsupial is the kangaroo. The Virginia opossum is the only marsupial native to the United States. Though not native to Idaho, the Virginia opossum is the only Marsupial that lives in Idaho.

Placentals

Placentals are the most common type of mammal. Placentals are those whose young develop over a long period of time in the female's uterus. Over 95% of mammals worldwide are placentals, including humans.

In addition to being classified by their mode of reproduction, mammals are further classified by what they eat into:

- Herbivores-eats only plants. Examples include rabbits, muskrat, and deer.
- Carnivores- mostly eat other animals. Examples include weasels, mountain lions, and wolves.
- Omnivores- eat plants, meat and other food sources. Examples include raccoons, opossums, coyotes, bears, and humans.
- Insectivores- eat insects. Examples include bats and shrews (shrews are also carnivorous).
- Granivores – eat seeds and nuts. Examples include squirrels and pocket mice.

There are also few other specialized feeders such as frugivores (fruit), piscivores (fish), sanguinivores (blood), and nectarivores (nectar).

Identification Techniques

The mammals of North America are a diverse and fascinating group. However, because most mammals are nocturnal, secretive, and quiet, they tend to be elusive. For instance, on a walk through the forest, you might expect to see only five or six species of mammals: chipmunks, squirrels and deer. Nevertheless, the woods contain many other kinds of mammals that are not easily discovered. Because many mammals are secretive, you must pay close attention to the evidence they might have left behind. Some of the signs left by mammals that can be used for identification purposes include trails, tracks, droppings (scat), burrows, nests, dens, and hair remains.
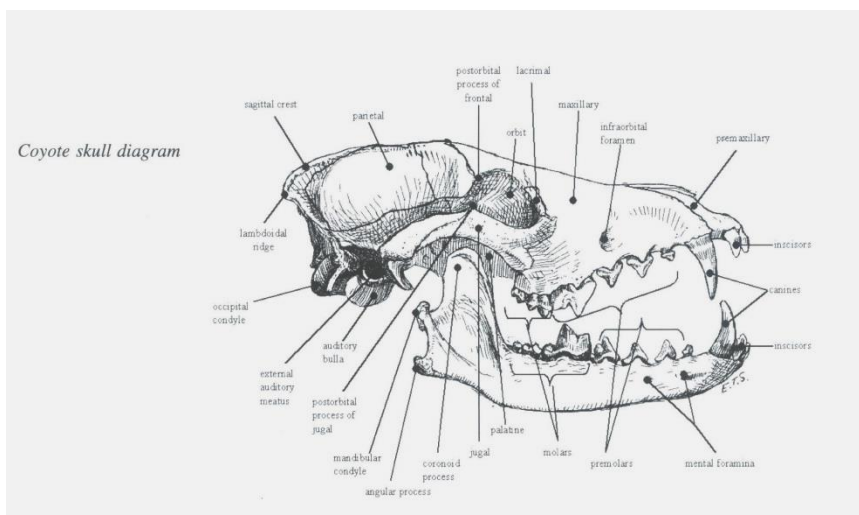

Wolverine tracks are followed by Idaho's nongame biologists each winter in their snow track survey. Wolverines are one of Idaho's most elusive mammals.

Identifying Tracks

When outdoors, look closely at the mud along streams or ponds and you will probably find an abundance of mammals tracks. Examine the forest floor. You will probably find an abundance of rabbit and deer droppings. You might find scat from a carnivore with pieces of bone and hair. A good field guide for identifying animal tracks is an important tool for a mammalogist. Olaus J. Murrie's (1954) book *A Field Guide to Animal Tracks,* by Houghton Mifflin, is a good reference and still in print.

Animal tracks can be divided into three broad categories: unguligrades, digitigrades, and plantigrades.

- *Unguligrades* walk on their "fingernails." These animals include deer, elk, bison, and pronghorn - all ungulates.
- *Digitigrades* walk on their digits. Lions, wolves, and coyotes are examples.
- *Plantigrades* walk on their entire foot. Humans and other primates, in addition, bears are plantigrades.

Identification by Hair

Whole books have been written on how to identify mammals by their hair. However, identification by hair characteristics is not a useful field technique since you need a microscope to view hair scales and other key identifying features. Because hair identification is not a useful field technique, it is not covered in the Master Naturalist curricula.

Identification by Skull

One of the most common and important methods for identifying mammals is by looking at the skull and teeth. Teeth are often the most important characteristic identifying mammals. The types, shape, and number of teeth are important.

Mammals have four main types of teeth. Each type has a different purpose. Some mammals have all four types while some have only two or three types. Herbivores, like white-tailed deer, have tall molar teeth with flat upper surfaces. Rabbits have well developed "incisors" for biting and cutting vegetation. Wide "molar" teeth with low bumpy crowns are found on omnivores like coyotes. Carnivores like bobcats must have sharp "canine" teeth in order to grab and stab the flesh of their prey. In addition, carnivores have "carnassials" that are used for shearing meat. In adult carnivores, the carnassials are the last upper "premolar" and the first lower molar. If you articulate (put the two together at the joint) the mandible and skull and then open and close the jaw, it is easy to see which pair of teeth would shear meat. This will help distinguish between premolars and molars. The only carnivore species that does not have well developed canines is the raccoon. Despite this fact, it still looks like a carnivore skull and is not difficult to recognize.

The figure above provides an overview of the key features of a skull and teeth that may be used in identifying mammals. Again, mountains of minute details on skull features have been collected and published in a variety of texts. Refer to the field guides on the Idaho Master Naturalist Booklist for help identifying skulls.

As you become familiar with mammals, you will find that the skulls of mammals from different orders look very different from each other. After a short while, you will not have trouble telling the skull of an insectivore from that of a carnivore. The skulls of mammals in different Orders are very distinctive. However, learning traits to identify mammals at familial (family) or generic (genus) level gets more complicated. Keys to identifying skulls and teeth are available.

The tooth formula is one of the easiest ways to identify mammals at the generic level. In many cases, the tooth formula is a distinguishing trait by itself. Tooth formulas are expressed as I 2/1, C 1/1, PM ¾, M 3/3. Translated, this means:

- *I 2/1* - 2 incisors in each half of the upper jaw/ 1 incisor in each half of the lower jaw.
- *C 1/1* - 1 canine in each half of the upper jaw/ 1 canine in each half of   the lower jaw (one canine/mouth quadrant).
- *PM ¾* - 3 premolars in each half of the upper jaw/4 premolars in each half of the lower jaw.
- *M 3/3* - 3 molars in each quadrant of the jaw (3 in each upper half, 3 in each lower half).

Mammals in Idaho

Idaho, with its wide variety of soils, climate, vegetation, and topography is home to 113 species of mammals (six are not native).

Group	Order	Characteristic Species	Number of species in Idaho
Marsupial	Didelphimorphia	Opossum (not native)	1
Placental	Chiroptera	Bats	14
	Insectivora	Moles and shrews	8
	Lagomorpha	Hares and rabbits	6
	Rodentia	Rodents and squirrels	51
	Carnivora	Coyote, weasel, bear	20
	Perissodactyla	Odd toed ungulates	1
	Artiodactyla	Even toed ungulates	9

Characteristics of the Major Groups of Mammals in Idaho
The following information provides a brief description of the characteristics of each of the order of mammals in Idaho. The number of species within each order that occur in Idaho is also noted. A complete listing of the species in each order in Idaho is located at the end of this chapter.

- *Order Didelphimorphia -* Didelphimorphia is among the oldest and most primitive of mammals. The chief characteristic of this order is the marsupium or pouch on the abdomen of females. Young are born after only partial development and conclude their development in the marsupium.

The Virginia Opossum, not native to Idaho, but Idaho's only marsupial resident.

- *Order Insectivora-* The insectivores are a hodge-podge of primitive placental mammals encompassing 373 species worldwide. Most are small and nocturnal and feed extensively on insects and other invertebrates, playing a large role in controlling insect pests. One species of mole and seven species of shrews are in Idaho.

- *Order Chiroptera -* Chiroptera, known as the order of bats, are the only mammals capable of true flight. Chiroptera is the second largest order of mammals worldwide with 942 known species. Only rodents outnumber bats in species. As a group, bats are crepuscular (dawn and dusk) or nocturnal (night) with small inefficient eyes but well developed ears. Some species hibernate, while others migrate seasonally.

- *Order Lagomorpha -* Lagomorphs include rabbits, hares, and pikas. Worldwide, there are 65 species of lagomorphs. They are distinguished from rodents by an additional pair of upper incisors located just behind the larger anterior pair. In addition, the number of premolars is /2/ or 3/2 and rodents have 2/1 or 0/0. Food is almost entirely vegetable matter.

Pygmy Rabbit, Idaho's smallest rabbit species. Photo Courtesy, Wendy Estez-Zumpf, University of Idaho.

- *Order Rodentia* - This is the largest of all mammalian orders with 1,686 species worldwide. The main distinguishing feature of rodents is their incisors, which grow continuously throughout their life. Most rodents eat vegetation but some, like the grasshopper mouse, feed on animal matter. Most rodents do not hibernate but some, like ground squirrels, may. Thirty species of rodents occupy Idaho making this the most diverse group of mammals in this state.

Golden-mantled ground squirrel.
Photo courtesy, IDFG.

- *Order Carnivora* - Generally defined as flesh-eating animals, there are 238 species worldwide in this order. All animals in the order Carnivora eat flesh, although some, like the raccoon or coyote, may feed almost exclusively on vegetation, especially in the spring and summer months. Idaho has 20 carnivore species.

- *Order Perissodactyla* - The only species of the order Perissodactyla in Idaho is the non-native wild horse. There are 17 species worldwide. Other members of this order include the rhinoceroses and tapirs.

Wild horses roam Owyhee County.
Photo courtesy, Sara Focht, IDFG.

- *Order Artiodactyla* - The artiodactyls have either two or four (usually) hoofed toes on each foot, with the exception of the peccary, which has four toes on each forefoot, but only three on the hind foot. The order includes our most important domestic animals along with the majority of the large mammals in the world encompassing 192 species. Artiodactyls are further divided into suborders by gastrointestinal features. Those with a two or three chambered non-ruminating stomach include the families Suidae (two chambers), and Hippopotamidae (three chambers). The Camelidae and Tragulidae have three chambered non-ruminating stomachs, while Antilocapridae, Bovidae, and Cervidae have four-chambered ruminating stomachs. Idaho has nine species of Artiodatyla.

Bighorn Sheep can easily be viewed in Idaho along the Salmon River Scenic Byway west of Challis and north of Salmon. Photo courtesy, Dick Nachbar.

Why do Different Mammals Live in Different Places?

Distribution of Mammals in Idaho

The geography of Idaho and its large size are key factors in the diversity of plants and animals found within the state. Wide variations in soils, climate, and topography make the vegetation and animal life of Idaho diverse. We have dry upland sage deserts in the south and lush boreal forests in the north.

The distribution of mammals throughout the state is often a result of the vegetative habitat that the animal prefers. Some mammals are found throughout the state and are called ubiquitous species (black bear, golden-mantled ground squirrel, and raccoon).

Other species have very particular habitat needs and are found only in certain plant communities (pygmy rabbit, mountain goats, American martin).

An American pika needs a very specific habitat. They require high elevation rocky (talus) slopes.

Mammals are distributed in Idaho based on

habitat needs (food, water, shelter, space) and their niche within that habitat.   Competition from other species or predator presence may also effect where a certain mammal can be found.

How have mammals adapted to their environment?

Embryonic Development

Placentals, like their closest relatives the marsupials, give birth to live young. In placentals, however, the young are nurtured within and from the body of the mother by the placenta, which allows nutrients to pass from the blood of the mother into the young's bloodstream. The placenta also provides oxygen to reach the developing young, thereby making more energy available than in marsupials.

Marsupial young are born hairless and helpless, and must crawl to a special pouch where they continue development. Some placental mammals, such as rodents and some carnivores, are not very different from marsupials. The young are born hairless and blind, and must be nurtured by their mother for a time before they can begin to live on their own. The primary difference in these cases is that the young are not carried in a pouch, as are marsupials.

The degree of development at birth varies greatly among different placental groups. Young ungulates (hoofed mammals) may be able to walk within minutes of being born, while human children may take years to accomplish this. The length of parental care following birth also varies greatly, from about a month to several years.

Reproductive Strategies and Advantages

One of the primary advantages of sexual reproduction is comparatively greater genetic variation. Genetic variation provides an animal the potential ability to meet environmental changes by adaptation.

Mammals can be divided into two groups, those that bear young and those that bear precocial young. Each mode is typically associated with a different life history strategy.

This white-tailed deer fawn will be walking soon after birth.

Mammals with altricial young live under generally unstable conditions with seasonal or unpredictable food resources. They are small in size and subject to heavy predation. Normally, litters are large (>7), the young are born in a nest, and the gestation and suckling periods are

short. The young reach sexual maturity rapidly and have short life spans. Under favorable conditions, breeding may occur throughout the year. High reproductive rates allow these mammals to take advantage of even brief periods of food abundance. With such opportunism go high population densities that are unstable seasonally and annually. A variety of mammals exhibits this pattern of reproduction including most rodents, rabbits, and shrews.

Mammals with precocial young, including the ungulates, some rodents, and cetaceans, typically live in a stable environment with a predictable food base. These animals are often large, reach sexual maturity late, and the gestation period is prolonged. Although these mammals have a slow reproductive rate, the survival rate of young is high because of the extended maternal care. Population stability, a low reproductive rate, low population turnover and dependence on a stable environment make these animals vulnerable to habitat alteration. Excellent examples of the advantages and disadvantages of this type of reproduction are typified by grizzly and black bears, wolverine, bighorn sheep, and mountain goats.

How are mammals monitored?

The goals of managing animal populations are mostly expressed in terms of population size. For example, when dealing with endangered or rare species managers often try to increase population size. When dealing with pest species, or in specific cases when a species reaches high populations and may cause damage to habitat for itself and/or other species, managers may try to reduce population size. Population size is the measure by which the success of management is judged, and estimating populations is critical to modern wildlife management.

This transect rope was laid out on the ground and walked by the scientist. Along the transect, each occurrence of scat was counted and recorded.

Methods for estimating populations are many and varied. Each method's accuracy and precision is affected by a wide variety of factors including, weather, time of day, observer variability, limited time and money, observability of the animal (i.e. is it easily visible and readily recognizable), seasonal time of year, and abundance and distribution of the animal to name a few variables. In addition, a single estimate of population size at one point in space and time is usually of limited value and provides little information on population status and trend.

Aerial surveys are often performed for big game species (mule deer, elk, bighorn sheep, mountain goats, and moose). **Harvest data** is collected for harvest data for black bears, mountain lions, and furbearers. **Pellet counts** are popular for rabbits and hairs. **Live trapping** is a common method for small mammals, such as rodents. **Line transect** surveys and burrow counts for pygmy rabbits. **Mist nets and acoustic** (bat detectors) monitoring for bats.

IDFG field technicians empty a small mammal trap. Photo courtesy, IDFG.

Capturing Mammals

Mammals are captured for food, research, fur, or when they are creating a nuisance problem for individuals or groups of landowners. Varieties of capture methods exist and can be used to capture and release an animal unharmed or capture and kill the animal for harvest. Traps are broken into five categories; live traps, leg hold traps, body gripping traps, snap traps, and snares.

Live traps capture small mammals unharmed. Live traps are effectively used in residential areas or in situations where the animal creating a problem may be transplanted to another area. For example in the case of beaver, Bailey and Hancock live traps which resemble an open suitcase and a half open suitcase are used to trap and relocate beaver. These traps are used primarily to catch individual beaver and are not effective for intensive trapping efforts.

This trap is a leg hold trap and is used to capture wolves in Idaho for monitoring and collaring. These traps do not harm the animal. Photo courtesy, Michael Lucid, IDFG.

Leg-hold traps are manufactured in several sizes and are available in padded and unpadded jaws. Properly used, let-hold traps are one of the most effective and economical ways of trapping animals for any reason. Leg-hold traps are used extensively for beaver, muskrat, wolves, coyote, and raccoon. Traps are set in travel lanes or near burrow openings, with or without bait.

Body-gripping traps, most commonly the Conibear, are chiefly used in water sets for muskrat and beaver. Conibear's do not allow for the release of the animal, resulting in a quick kill. These traps are typically placed at the entrances of burrows or lodges, and in runs or slides. Most states prohibit use of Conibear traps in dry-land habitats.

Snap traps are used to control mice and rats and have the advantage of providing little danger to non-target species. Typical baits used with snap traps include peanut butter, oatmeal or apples. Snap traps can be used outdoors to capture rodents when only few animals are involved or to capture animals for identification or population indexing purposes.

This Northern Idaho Ground Squirrel has been marked with hair dye in a capture and mark study by IDFG nongame biologists. Photo courtesy, Diane Evans-Mack, IDFG.

Snares are made of a light wire or cable looped through a locking device or a small nylon cord tied so it will tighten as the animals push against the snare. Many states strictly regulate the use of snares. Snares are very effective and are placed on well-defined trails or at a specific entrance such as a hole in a fence. Snares are effective on a wide variety of animals such as coyotes and red fox. (Specially designed foot snares are used for capturing bears.)

Mammal Marking Techniques

Although the capture techniques outlined above are often used to control animal populations, they are also effective in capturing animals for study. Once an animal is captured for study however, sometimes it needs to be marked for monitoring and possible recapture at a later date. Animals are typically marked to track problem individuals, for mark recapture studies to estimate numbers. Marking of animals takes some expertise to prevent injury or inhibiting an animal's movement and should not be conducted without expert assistance. Many states and the federal government may require individuals to obtain a license or permit to mark animals.

Ear tags and collars are commonly used for ungulates. Photo courtesy, IDFG.

Mammals may be marked with special ear tags made from metal or plastic in a variety of shapes and colors. Tags are usually designed to be interlocking, self-locking or a rivet design that cannot be easily pried apart. Tags should be placed in the lower inner region of the ear where there is heavier cartilage to reduce tearing of the ear or losing the tag. Tags should be loose enough not to interfere with blood circulation. Puncture holes in the animal's ear should be treated appropriately to prevent infections.

Neck collars and bands have been designed for field identification of free ranging animals. Collars are expansible to allow for growth and are highly visible. However, their longevity depends on the manufacturing material, climate, and behavior and sex of the animal collared. Collars are typically used on ungulates, but are also used on carnivores, and waterfowl.

Paint marking/paint ball guns have been used to temporarily mark animals. Small mammals are sometimes marked in capture-recapture studies.

Collared mountain goat. Photo courtesy, IDFG.

A Complete List of Idaho's Mammals

- *G - Game species whose harvest is regulated by the Idaho Dept. of Fish & Game through bag limits and seasons.
- *L - Species not under control of Idaho Dept. of Fish & Game that fall under the purview of the Idaho legislature.
- *P - Protected Nongame species for which it is illegal to collect, harm, or otherwise remove from its natural habitat except as provided under Idaho Code or Commission Regulations.
- *Exotic - Species that humans intentionally or unintentionally introduced into an area outside of a species natural range.

Opossum

- Virginia Opossum (Didelphis virginiana) *Exotic

Moles and Shrews

- Masked Shrew (Sorex cinereus)
- Vagrant Shrew (Sorex vagrans
- Dusky Shrew (Sorex monticolus)
- Dwarf Shrew (Sorex nanus)
- Water Shrew (Sorex palustris)
- Merriam's Shrew (Sorex merriami)
- Pygmy Shrew (Sorex hoyi)
- Coast Mole (Scapanus orarius)

Bats

- Little Brown Bat (Myotis lucifugus) *P
- Yuma Myotis (Myotis yumanensis) *P
- Long-eared Myotis (Myotis evotis) *P
- Fringed Myotis (Myotis thysanodes) *P
- Long-legged Myotis (Myotis volans) *P
- California Myotis (Myotis californicus) *P
- Western Small-footed Myotis (Myotis ciliolabrum) *P
- Silver-haired Bat (Lasionycteris noctivagans) *P
- Western Pipistrelle (Pipistrellus hesperus) *P
- Big Brown Bat (Eptesicus fuscus) *P
- Hoary Bat (Lasiurus cinereus) *P
- Spotted Bat (Euderma maculatum) *P
- Townsend's Big-eared Bat (Corynorhinus townsendii) *P
- Pallid Bat (Antrozous pallidus) *P

Pikas, Rabbits, and Hares

- American Pika (Ochotona princeps) *P
- Mountain Cottontail (Sylvilagus nuttallii) *G
- Snowshoe Hare (Lepus americanus) *G
- White-tailed Jackrabbit (Lepus townsendii) *L
- Black-tailed Jackrabbit (Lepus californicus) *L
- Pygmy Rabbit (Brachylagus idahoensis) *G

Rodents and Squirrels

- Least Chipmunk (Neotamias minimus) *P
- Yellow-pine Chipmunk (Neotamias amoenus) *P
- Cliff Chipmunk (Neotamias dorsalis) *P
- Red-tailed Chipmunk (Neotamias ruficaudus) *P
- Unita Chipmunk (Neotamias umbrinus) *P
- Yellow-bellied Marmot (Marmota flaviventris)
- Hoary Marmot (Marmota caligata)
- White-tailed Antelope Squirrel (Ammospermophilus leucurus)
- Piute Ground Squirrel (Spermophilus mollis); subspecies artemisiae in Eastern Idaho is protected *P

- Merriam's Ground Squirrel (Spermophilus canus) *P
- Northern Idaho Ground Squirrel (Spermophilus brunneus brunneus) *P
- Southern Idaho Ground Squirrel (Spermophilus brunneus endemicus) *P
- Uinta Ground Squirrel (Spermophilus armatus)
- Belding's Ground Squirrel (Spermophilus beldingi)
- Columbian Ground Squirrel (Spermophilus columbianus)
- Rock Squirrel (Spermophilus variegatus) *P
- Golden-mantled Ground Squirrel (Spermophilus lateralis) *P
- Wyoming Ground Squirrel (Spermophilus elegans); subspecies nevadensis in Southwest Idaho is protected *P
- Red Squirrel (Tamiasciurus hudsonicus) *P
- Eastern Gray Squirrel (Sciurus carolinensis) *Exotic
- Eastern Fox Squirrel (Sciurus niger) *Exotic
- Northern Flying Squirrel (Glaucomys sabrinus) *P

Pocket Gophers

- Townsend's Pocket Gopher (Thomomys townsendii)
- Northern Pocket Gopher (Thomomys talpoides)
- Idaho Pocket Gopher (Thomomys idahoensis)

Pocket Mice and Kangaroo Rats

- Little Pocket Mouse (Perognathus longimembris) *P
- Great Basin Pocket Mouse (Perognathus parvus)
- Dark Kangaroo Mouse (Microdipodops megacephalus) *P
- Ord's Kangaroo Rat (Dipodomys ordii)
- Chisel-toothed Kangaroo Rat (Dipodomys microps)

Beaver

- American Beaver (Castor canadensis) *G

Mice, Rats, and Voles

- Western Harvest Mouse (Reithrodonotomys megalotis)
- Deer Mouse (Peromyscus maniculatus)

- Canyon Mouse (Peromyscus crinitus)
- Pinon Mouse (Peromyscus truei)
- Northern Grasshopper Mouse (Onychomys leucogaster)
- Desert Woodrat (Neotoma lepida)
- Bushy-tailed Woodrat (Neotoma cinerea)
- Southern Red-backed Vole (Clethrionomys gapperi)
- Heather Vole (Phenacomys intermedius)
- Meadow Vole (Microtus pennsylvanicus)
- Montane Vole (Microtus montanus)
- Long-tailed Vole (Microtus longicaudus)
- Water Vole (Microtus richardsoni)
- Sag ebrush Vole (Lemmiscus curtatus)
- Muskrat (Ondatra zibethicus) *G
- Northern Bog Lemming (Synaptomys borealis) *P
- Norway Rat (Rattus norvegicus) *Exotic
- House Mouse (Mus musculus) *Exotic
- Western Jumping Mouse (Zapus princeps)

New World Porcupines

- North American Porcupine (Erethizon dorsatum)

Carnivores

- Coyote (Canis latrans) *L
- Gray Wolf (Canis lupus) *P
- Red Fox (Vulpes vulpes) *G
- Kit Fox (Vulpes macrotis) *P
- Black Bear (Ursus americanus) *G
- Grizzly (Brown) Bear (Ursus arctos) *P
- Northern Raccoon (Procyon lotor) *G
- American Marten (Martes americana) *G
- Fisher (Martes pennanti)
- Ermine (Mustela erminea) *L
- Long-tailed Weasel (Mustela frenata) *L
- American Mink (Mustela vison) *G
- Wolverine (Gulo gulo) *P
- American Badger (Taxidea taxus) *G

- Northern River Otter (Lontra canadensis) *G
- Western Spotted Skunk (Spilogale gracilis) *L
- Striped Skunk (Mephitis mephitis) *L
- Mountain Lion (Puma concolor) *G
- Lynx (Lynx canadensis) *P
- Bobcat (Lynx rufus) *G

Ungulates

- Elk (Cervus elaphus) *G
- Mule Deer (Odocoileus hemionus) *G
- White-tailed Deer (Odocoileus virginanus) *G
- Moose (Alces alces) *G
- Woodland Caribou (Rangifer tarandus caribou) *P
- Pronghorn (Antilocapra americana) *G
- Mountain Goat (Oreamnos americanus) *G
- California Bighorn Sheep (Ovis canadensis californiana) *G
- Rocky Mountain Bighorn Sheep (Ovis canadensis canadensis) *G
- Feral Horse (Equus caballus) *P

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